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The

Monthly Evening Sky Map

A JOURNAL FOR THE AMATEUR — FOUNDED BY THE LATE LEON BARRITT
—NORTHERN AND SOUTHERN HEMISPHERE—

ALSO A STAR, CONSTELLATION AND PLANET FINDER MAP ARRANGED FOR THE CURRENT MONTHS — JAN.-FEB.-MAR. MORNING AND EVENING — AND PRACTICAL ANYWHERE IN THE WORLD

PUBLISHED QUARTERLY

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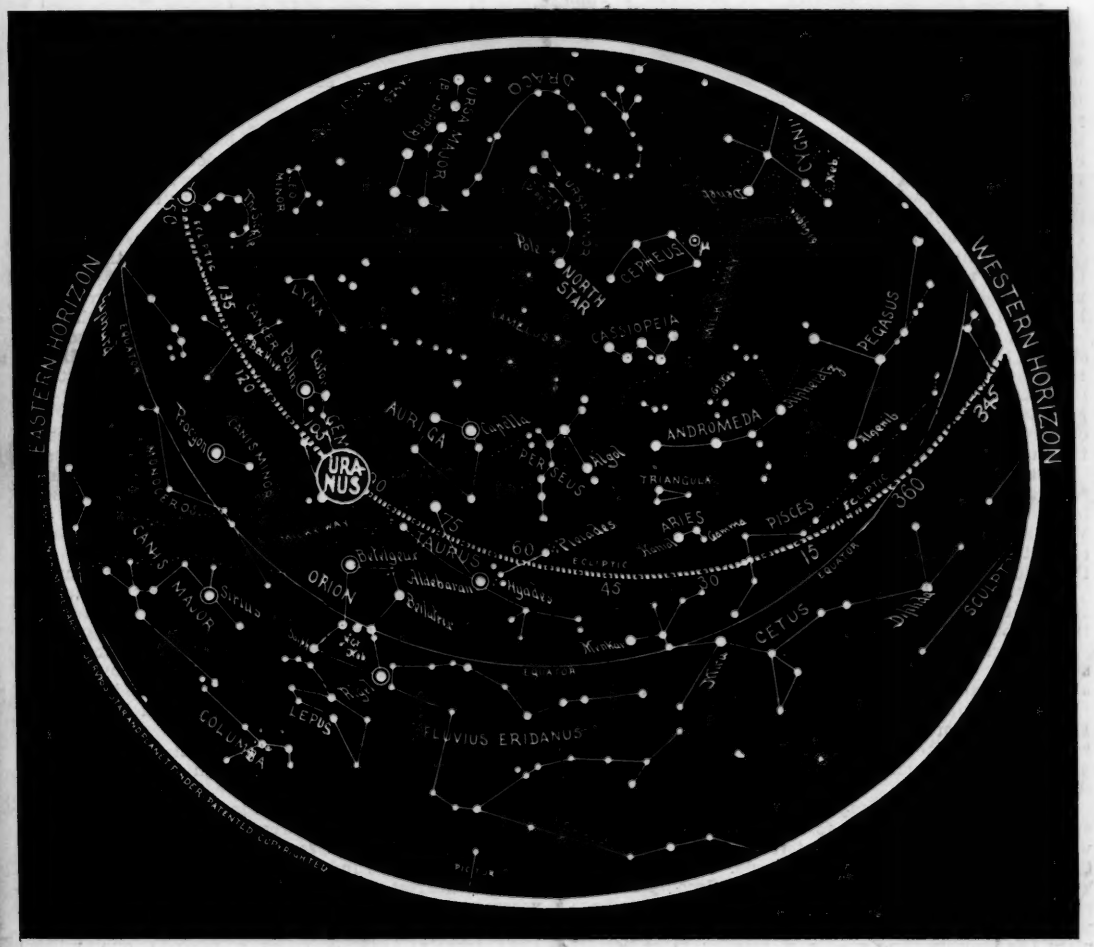
EVENING SKY MAP FOR JANUARY

NORTH



SOUTH

Face South And Ho'd The Map Overhead. The Top North And You Will See The Stars And Planets Just As They Appear In The Heavens. The Arrow Through The Two Stars In The Bowl Of The Big Dipper Points To The North Star. The Star At The End Of The Little Dipper.

AT 9:00 P. M., JAN. 1; 8:00 P. M., JAN. 15; 7:00 P. M., JAN. 31.

This map is arranged specifically for Latitude 40 North—New York—but is practical for ten or fifteen degrees north or south of this latitude anywhere in the United States, the southern portion of Canada and the northern portion of Mexico and for corresponding latitude in Europe.

XUM

THE UNIVERSAL CLOCK

A Christmas Message Of The Stars

Reprinted by request

A sunset in a rift of clouds, a moonrise on living water or the solemn beauty of a starry night, are touches from the magic wand of eternity that lift our soul to a higher plane.

Leading the way to that higher plane of life is the mission of science—the creative urge in man.

Science started when primitive man discovered that his hand could hurl a rock at his fleeing prey, science made man look up at the sun whose heat gave him the first thought of fire, and whose fast-moving disk inspired him to put his burdens on wheels. Through the urge of science, he found in the waning moon the sickle for his harvest, in the rainbow his bow, in the meteors his arrow, in the shafts of lightning the javeline to spear his game. On the unmoving pole, he built the cross-staff to steer his ships; but in the rhythmic motion of the stars he learned the harmony of law and order, and the chronometric strides of time.

Throughout the ages of progress man has looked up at the heavens to solve his earthly problems, but with the blaze of illumination in his cities, man has dimmed the lustre from above and lost his loving acquaintance with the stars.

But his growing prosperity that buys him automobiles, and yachts, and airplanes is bringing him back to the stars. When he happens to stop in a lonely spot and suddenly finds himself in the solemn cathedral of the universe, something within him snaps and a voice from that labyrinth of brilliance seems to call: "Why don't you know us better?" He feels forlorn, and right there makes a resolution to study the names of a few stars and constellations, which he forgets the moment of his return to the struggling ranks of life.

Every person who takes an interest in nature should have a few friends among the stars, for they display creation's beauty and abundance.

A meditation in solitude under the stars will bare our soul a moment, from all earthly desires and make us feel close to eternity, nearer to God. It is the strongest builder of character and the purest source of wisdom.

With the unaided eye we can see about six thousand stars in the sphere. The 100 inch telescope at Mount Wilson Observatory can reach close to 500 millions. The 200 inch telescope, now constructed, may r e a c h 40 billions. Eternity, however, is not limited to the human conception of things with a beginning and an end, so the number of stars in space may be infinite.

Each one of these stars is a sun, hotter than a blast-furnace. Day by day our observatories discover more black bodies, or planets, that revolve around these suns. What stunning number of worlds there are in space, we can not fathom. We can only wonder at the magnitude of the whole.

Stars and their worlds come and go. They exist in all stages of development, from spinning nebulae to suns that shoot up flames a million miles high; and from settling globes that belch forth mountain chains to strengthen their crust, to cooler worlds which have already separated their gases from the solid matter into a life-giving atmosphere and a life-bearing surface. Even dying worlds with cores that repel their matter in a tail of meteors roam through space, crossing the path of other worlds that attract their disintegrating substance.

On planets with atmospheres and solid crusts, beings spring up; first in simple form, then huge and brutal with the strength and protective armor to withstand the rigors of a young eruptive world. These monsters kill and devour each other. Their worlds decompose their remains into food for their soil. After the elements have worn down a layer of dust from the primordial rocks, plant life improves and gradually, smaller, more perfect beings follow in the wake of the primeval monsters. The more beings live and die on a planet, the richer grows its crust. Death ends the existence of creatures on their worlds but life itself has no end. It flows from one form into another in an eternal stream.

While life dwells in a being, nature wraps it in beauty as only a versatile artist like nature can do. She inflates its body with air and moisture. Gives it a grace of outline daubed in harmonious colors, an agile suppleness of membranes and tissue and provides it with the most wonderful weapons for its defense and for the capture of prey. Nature may be cruel but she hides her cruelty under a mantle of grace. She never duplicates, no two things from a grain of sand to a star are ever alike. She stamps individuality on every particle of creation.

With the advent of man, however, something beyond the bounds of earth and nature came down from cosmic space. The one great moving force that stands closest to creation itself, the creative urge, the constructive faculty to think. Creation gave man not only a soul, a drop of its own fluid force, but it has given that soul wings, wings faster than light and more powerful than the strength of all the beasts combined.

Shall we use these wings to climb higher, or shall we let them drag and wear them down? Did we receive these wings to crawl and go glut ourselves with the ragweed of monotony that satisfies the beast, or were they given us to fly far and go sip the mead of the flowers of progress that only bloom in the gardens of achievement? Will a forgotten corner in the shade be all we want to know of a world 24,000 miles in circumference with beauty and abundance on every inch of its crust?

Must we hurt and devour our kin like the prehistoric monsters did or shall we use our wings to know our neighbors better and love them beyond the pales that birth and tradition have put up between their conception of life and ours? Born with eagles' wings, shall we fear to spread them and soar aloft to veer and steer patiently and look out sharp for an opportunity to pass; and when we spot her, swoop down, grip her firmly and hold her tight until she gives up our rightful share of happiness?

If we fear the effort we do not deserve beter than to live like crabs and crawl backward in the shade where there are no stars or eagles; only other crabs that prowl on left overs and grab with silent, sneaky pincers what they are too prone to earn on open, singing wings.

Creation must hate poverty, for the most lonely crag, or swamp, or desert are steeped in the glorious beauty of wealth.

Why are worlds chunks of crude riches from crust to core, surrounded by heavens with the brilliance of glory? Is it to induce man to be a pauper and become a burden to his kin, or is it a wink to make him dig and delve for independence that makes him a benefactor to his world?

Day and night the heavens are calling to make man look up at greatness and to make him think. For besides our own there are other worlds in space—swarms of them they are all struggling for progress. Progress is achieved by thought. Thought on all those worlds seeks guidance in cosmic space. So if we want a guiding drop from that boundless ocean of thought, let us tap it where it flows.

But of that ethereal sea of knowledge, we can not throw the floodgates open wide. Inspiration must be wrung from it with the fervence of prayer. Creation does not grow by leaps and bounds. The strides of progress are measured with patient precision, like the rhymthic tick of a clock we can not see the hands of time move, though they keep ever progressing, never stop. So if we want to create, we must do it persistently with the patience and the precision of time.

So far, we did not look at the dial of the universal clock. Yet, we heard it tick through the centuries and many clocks are ticking in space, for every star and planet has the means of recording time. Let us prepare now to find out how time registers the progress of our earth with the same precision as He engraves every deed we do on the indelible record of our conscience.

Our nearest star, Alpha Centauri, is 4 1/3 light years, or 25 trillions of miles away from us. To reach the farthest known nebula would take, at the speed light travels (186,285 miles a second) one million centuries.

Within a free space, not less than twice the distance to our nearest star or 50 trillions of miles wide, revolves the solar system whose center is our sun, a ball of liquid fire, 885,000 miles across. In 26 days the sun makes one revolution. Around this sun circle nine planets of which our earth is one and nearly a thousand small bodies called asteroids. The farther these planets are away from the sun, the greater are their orbits and

the longer it takes to complete their path.

All around the solar system a giant sphere of stars stands still. That is: still to our conception, some of these stars approach us, others recede. All, however, describe vast orbits. But they are so incredibly far away that a few billion miles one way or the other cannot be registered by our vision. Barring a few deviations, mostly caused by the constant wandering of the earth's axis. We see the stars today keep their fixed place in the constellations as man saw them when his home was a cave and his sole weapons were his teeth and his fingernails.

Like a band of tinsel. The Milky Way, or galaxy, encircles the earth from north to south. Another belt of distinct stars, grouped in twelve constellations, crosses the Milky Way from east to west. At night we see about one-half of this belt span the firmament like a star-spangled rainbow. That belt is the zodiac.

The ecliptic is the leaning path of the earth around the sun, and evidently also the apparent path that the earth's motion makes the sun describe in the heavens. If we watch the sun by day, it is easy to locate the zodiac at night.

Our seven sister planets move with us around the sun, while the moon circles around the earth. But as the plane of all these orbits lies within the plane of the zodiac, we see the sun, the moon and the planets never anywhere else than in the zodiac.

The inner planets, Mercury and Venus, are closer to the sun than the earth. We only see them in the east before sunrise or in the west after sunset, always close to the sun. They are never overhead. The outer planets, Mars, Jupiter, Saturn, Uranus, Neptune and Pluto are farther away from the sun than we are and can be found in any region of the zodiac from east to west. Planets have no fixed places like the stars, neither do they twinkle, they only reflect sunlight like the moon.

In one year, or exactly 365 days, 5 hours, 48 minutes and 48 seconds, the earth travels an elliptic path around the sun, 584 million miles long. Every day the earth makes one complete revolution before the sun and at the same time advances 1,600,000 miles on her yearly path. Wherever the earth is moving, she always keeps her northern axis toward a point in the heavens 1¼ degrees from Polaris our present pole star. This makes it clear that we have no south pole star, because the earth's southern axis describes a yearly circle.

Creation, from an electron to a star, moves in circles. To understand celestial motions thoroughly, we must know that any circle of any size has 360 degrees of Arc. The zodiac has 12 figures, each 30 degrees apart, or in all 12x30; 360 degrees.. The earth has 24 meridians of longitude, or hour-circles, all 15 degrees apart, 24x15; 360 degrees. The earth's path around the sun is a circle, or an ellipse, very near so, with 360 degrees of Arc.

In 24 hours the earth makes one complete revolution, so any hour-circle must pass in that time by all the stars in the still sphere of the heavens.

While the earth makes in 24 hours one revolution, she also moves forward one 365¼ part of the total 360 degrees of her path around the sun, or nearly one degree. Each day the earth creeps therefore nearly one degree farther into the starry sphere, and repeating that excess 365¼ times she pushes each hour circle on her surface in one year once extra through all the stars. Hence we see the stars which are standing out-side our path 365¼ times by our daily revolution and once more by our yearly extra circuit, or 366¼ times; while we see the sun, inside our orbit, only 365¼ times.

This makes the difference between solar time and sideral or star-time. The solar year has 365¼ days or 24 hours, the star-year 366¼ days of 23 hours, 56 minutes and 4 seconds, as we can not count years by ¼ days, we drop ¼ day during three common years and add a whole day to the fourth or leap year.

If we did not make that extra daily shove of nearly one degree the heavens would look monotonous, for we would see the same stars every night at the same time. Now we see the stars every night from a new location, 1,600,000 miles farther on our yearly orbit or nearly one degree farther under the starry sphere. By this wonderful arrangement the stars come up (if we may say so) every night four minutes earlier or two hours earlier each month. This puts the sun each month in a new figure of the zodiac, it brings every month a new constellation of the zodiac in the sky and puts each new season at the same hour of night three different constellations of the zodiac overhead, so that we can divide the celestial host in Spring, Summer, Autumn, and Winter stars.

By reading the universal clock for one single turn of her moving hand, the earth, we have learned that we meet the stars in the east every day four minutes earlier, that we pass every 24 hours under all the stars, that we stand each night nearly one degree farther east under the starry sphere and that the people of the entire world see the same stars at the same hour of their local time. Only the latitude wherein we live can prevent us from seeing some stars.

At the equator and within the tropical zone all the stars can be seen, because both poles seem to be level with the earth. The farther north we go, the less we see of the southern hemisphere; the farther south, the less we see of the northern stars. In the Arctic Zone Polaris as if placed inside a cup with the zodiac for a border. In the Antarctic Zone the southern stars act the same without a still center, because the latter wanders over a circle during each year. There is no fixed south pole star.

The moon is a lifeless mass of craters and deserts, 2,100 miles in diameter, without any visible trace of air or water. At a distance of 250,000 miles she travels around the earth in about 29¼ days. In that time she makes one turn upon her axis so that we see her same side all the time. Each day the moon creeps about 1/30 of her orbit eastward. As the earth makes daily a full turn before the moon, we overtake her every day 48 minutes later. The attraction of the moon causes the tides on earth. At new moon, when sun and moon pull together on the earth's mass, and at full moon when the sun and the moon pull at opposite sides of the earth. We have the high, or Spring tides, while during the quarter phases of the moon we have the lower neap-tides.

As both the equator and the ecliptic are circles with a common center, they have to cross each other twice. That happens on March 21 during the vernal equinox and on September 21, during the autumnal equinox, when days and nights on earth are equal. During the winter solstice, on December 21, the earth reaches the farthest point north under the sun. Days on the northern hemisphere now are short and nights are long. Although the earth is now nearest to the sun, the sun-rays fall at such a slant on the northern hemisphere that the temperature drops and Winter prevails. On June 21, the summer solstice, the earth is farthest south from the sun. The southern hemisphere feels now its winter season.

The sun and the moon are constantly pulling the earth's axis out of place. Not being a perfect sphere, the earth responds to that pull. Although the moon is a trifling globe compared to the sun, she is so much nearer that her influence is twice as great. She makes the earth's axis describe a minute circle every 18 2/3 years. That disturbance is called nutation.

But sun and moon together make these 18 2/3 years circles spiral forward over a far wider circle around the ecliptic pole which the earth completes in 25,800 years. This brings on a remarkable difference in our position toward the stars and the sun, causing a gradual change of climate and a mild ice-age. This motion is known as the precession of the equinoxes.

The ancients did not steer their ships by Polaris, our present north pole star, which, even now describes a 2½ degree circle in the sky, and within 12,000 years, Vega will be our pole star. For this same reason did the ancients see the sun during the vernal equinox in Aries, while we see him in Pisces. So, 2,150 years hence the sun will be in Aquarius, because 2,150 is one-twelfth of 25,800 years. One constellation is also one-twelfth of the whole zodiac. So every succeeding 2,150 years the sun will stand during the vernal equinox in a new figure of the clock, until after twelve such periods the present order will be restored.

Driven by the breath of eternity, the universal clock reminds us of the passing flow of life. After a few ticks of hours, years, and some of the 18 2/3 years cycles. We become driftwood to be left on the shores of oblivion. Time, however, shall keep on measuring the current's progress in periods of 2,150 years, ages of 25,800, and

(Continued on Page Eleven)

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AMATEUR'S FORUM
January, 1951

By IRVING L. MEYER, M. S.

THE SUN: travels eastwardly from Sagittarius into Capricornus and commences to move more rapidly northward. The earth is closest to the Sun the 1st at 91.3 million miles.

THE MOON: is at perigee (closest to the earth) the 6th at 223,000 miles, and is at apogee (farthest from the earth) the 18th at 252,000 miles.

The Moon's Phases (E. S. T.):

Last Quarter	January 1 at	12:11 AM
New Moon	January 7 at	3:10 PM
First Quarter	January 14 at	7:23 AM
Full Moon	January 22 at	11:47 PM
Last Quarter	January 30 at	10:13 AM

MERCURY: is in inferior Conjunction with the Sun on the 1st, and enters the morning sky. It remains in Sagittarius all month, and will be visible just before dawn for a few days around the 23rd, on which date greatest elongation west, 24° 31' is reached. Magnitude on this date is 0.0. which will make it a bright object. Telescopically it will appear about two-thirds illuminated or like the Moon a few days past the first quarter. Minimum geocentric distance, the 3rd, is 62.5 million miles.

VENUS: is an evening object, moving from Sagittarius through Capricornus into Aquarius. Though not yet well placed for observation its gem-like brilliance will make it readily visible in the west just after sunset. Distance the 1st is 155 million miles, and the 31st is 147 million miles.

MARS: is fading from the evening scene. It passes from Capricornus into Aquarius as a 2nd magnitude object, and sets shortly after sunset. Geocentric distance increases from 194 million miles the 1st to 204 million miles the 31st.

JUPITER: in Aquarius, is also about to drop out of the evening sky. Averaging about 1.7 magnitude during the month, it can be picked out easily shortly after sunset. At the end of the month Mars will be only a short distance west of Jupiter. On the 15th its distance from the earth is 524 million miles.

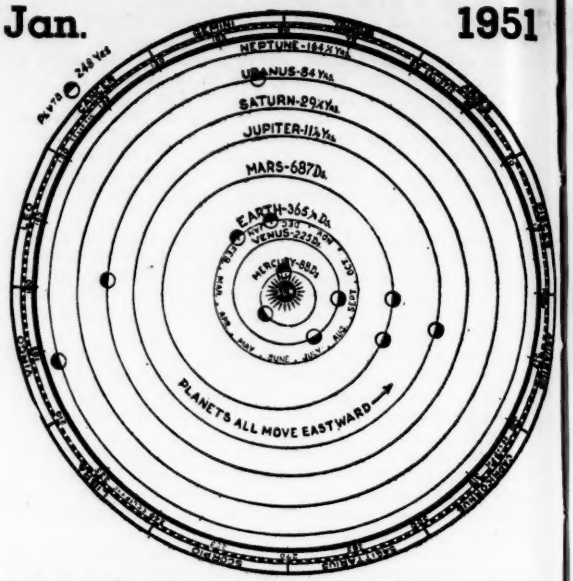
SATURN: is the reigning planet of the night sky, rising well before midnight in Virgo. It is approaching opposition, consequently is coming closer to the earth daily, and brightening. But its distance from the earth is so huge (841 million miles the 15th) that variations in Saturn's apparent size and brightness are not marked.

URANUS: rides high in the northern heavens in Gemini, well placed for observation. It is just past opposition, and since magnitude is about 5.8 it can be seen with the naked eye on a clear, moonless night. A telescopic power of about 50 diameters will reveal its neat, round disc, the apparent diameter of which is 3.8". Distance the 15th is 1666 million miles.

NEPTUNE: is a telescopic object only, appearing as an 8th magnitude object. It is north of Spica in Virgo, rising around midnight. Distance the 15th is 2806 million miles.

PLANETARY CONFIGURATIONS
Eastern Standard Time
January, 1951

Jan. 1—	3:00 PM	Inferior conjunction, Mercury and Sun: Mercury north 2° 35'.
Jan. 1—	7:41 PM	Conjunction, Neptune and Moon; Neptune north 4° 25'.
Jan. 1—	11:00 PM	Earth in Perihelion.



Orbits and Heliocentric Movements of the Planets for January, 1951
NOTE: The planets are shown in their respective orbits. Two positions, one for the first, and one for the last day of the month, are given for Mercury, Venus and Mars. The arrow indicates the last day of the month. Jupiter, Saturn, Uranus and Neptune are shown in the mean position for the current month.

Jan. 2—	10:00 PM	Venus in Aphelion.
Jan. 6—	7:08 PM	Conjunction, Mercury and Moon; Mercury north 8° 12'.
Jan. 8—	2:00 AM	Mercury greatest heliocentric latitude north.
Jan. 8—	1:27 PM	Conjunction, Venus and Moon; Venus north 2° 38'.
Jan. 9—	9:14 PM	Conjunction, Mars and Moon; Mars north 1° 36'.
Jan. 10—	8:00 AM	Quadrature, Neptune and Sun.
Jan. 11—	2:31 AM	Conjunction, Jupiter and Moon; Jupiter north 0° 13'.
Jan. 12—	10:00 AM	Mercury stationary in Right Ascension.
Jan. 13—	12:00 AM	Saturn stationary in Right Ascension.
Jan. 20—	8:38 PM	Conjunction, Uranus and Moon; Uranus south 4° 34'.
Jan. 21—	4:00 PM	Neptune stationary in Right Ascension.
Jan. 23—	6:00 PM	Mercury greatest elongation west, 24° 31'.
Jan. 25—	11:00 AM	Venus greatest heliocentric latitude south.
Jan. 27—	6:29 PM	Conjunction, Saturn and Moon; Saturn north 3° 58'.
Jan. 29—	1:49 AM	Conjunction, Neptune and Moon; Neptune north 4° 43'.
Jan. 31—	12:00 PM	Mercury in descending node.

PLANETARY CONFIGURATIONS
Eastern Standard Time
February, 1951

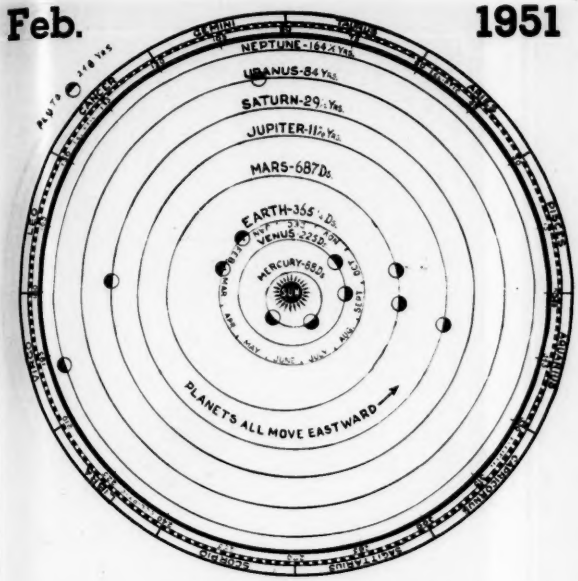
Feb. 4—	10:09 AM	Conjunction, Mercury and Moon; Mercury north 3° 53'.
Feb. 7—	2:00 PM	Conjunction, Mars and Jupiter, Mars north 0° 10'.
Feb. 7—	5:11 PM	Conjunction, Venus and Moon; Venus south south 0° 36'.
Feb. 8—	12:07 AM	Conjunction, Jupiter and Moon; Jupiter south 0° 30'.
Feb. 8—	12:34 AM	Conjunction, Mars and Moon; Mars south 0° 21'.
Feb. 8—	1:00 AM	Opposition, Pluto and Sun.
Feb. 10—	7:00 PM	Mercury in aphelion.
Feb. 11—	10:00 AM	Conjunction, Venus and Jupiter; Venus south 0° 26'.
Feb. 15—	11:00 PM	Conjunction, Venus and Mars; Venus south 0° 35'.
Feb. 17—	2:48 AM	Conjunction, Uranus and Moon; Uranus south 4° 42'.
Feb. 23—	10:19 PM	Conjunction Saturn and Moon; Saturn north 4° 3'.
Feb. 25—	6:58 AM	Conjunction, Neptune and Moon; Neptune north 4° 50'.

AMATEUR'S FORUM
February, 1951

By IRVING L. MEYER, M. S.

THE SUN: moves from Capricornus into Aquarius. Distance increases slightly during the month—from 91.5 million miles the 1st to 92.0 million miles the 28th.

THE MOON: is at perigee the 3rd at 227,000 miles distance and at apogee the 15th at 251,000 miles.



Orbits and Heliocentric Movements of the Planets for February, 1951
NOTE: The planets are shown in their respective orbits. Two positions, one for the first, and one for the last day of the month, are given for Mercury, Venus and Mars. The arrow indicates the last day of the month. Jupiter, Saturn, Uranus and Neptune are shown in the mean position for the current month.

The Moon's Phases (E. S. T.):

New Moon	February 6 at	2:45 AM
First Quarter	February 13 at	3:55 PM
Full Moon	February 21 at	4:12 PM
Last Quarter	February 28 at	5:59 PM

MERCURY: in the morning sky all month, moves from Sagittarius through Capricornus to a point near the Aquarius boundary. It is possible to see the planet just before sunrise, low in the east, for the first few days of the month. It is best seen from the southern hemisphere. Distance the 1st is 105 million miles and the 28th is 127 million miles.

VENUS: is beginning to become a prominent object in the early evening sky. At magnitude 3.3, it is the brightest star-like object in the heavens. It moves from Capricornus through Aquarius into Pisces, at distances decreasing from 147 million miles to 138 million miles. On the 11th it is less than a lunar diameter from Jupiter and on the 15th it is only slightly farther from Mars.

MARS: is a relatively faint object in the evening sky, setting shortly after sunset. It moves from Aquarius into Pisces, and is 205 million miles away the 1st compared with 213 million miles the 28th. It is only about 1/3 of a lunar diameter from Jupiter on the 7th.

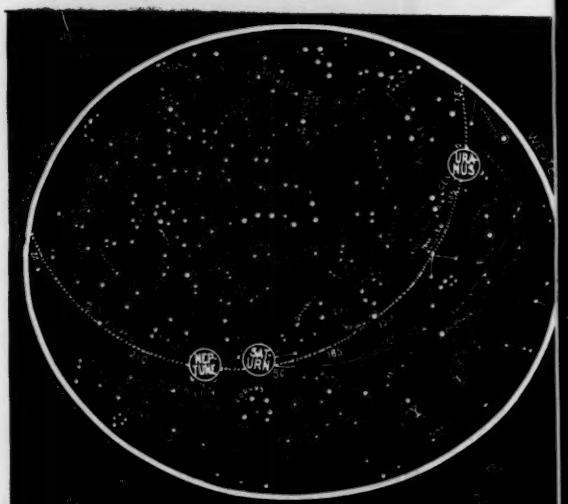
JUPITER: is soon to enter the morning sky. A bright object in Aquarius, it nevertheless will look dim alongside Venus on the 11th. Distance the 15th is 548 million miles.

SATURN: just north of the equator in Virgo, is becoming increasingly better placed for observation, and rises shortly after sunset. Its geocentric distance the 15th is 841 million miles.

URANUS: in Gemini, at the northern peak of the heavens, is above the horizon most of the night. It is a 6th magnitude object, visible to the naked eye, and readily observable with any optical aid. Distance the 15th is 1693 million miles.

NEPTUNE: in Virgo, a morning sky object, rises shortly after dark, and is well placed for observation. Cannot be seen with the naked eye, but even good binoculars will reveal it. Distance the 15th is 2760 million miles.

PLUTO: this is the most remote planet, and exceedingly faint. It is mentioned here only for the sake of completeness, since it comes to opposition the 8th, in Leo, at a geocentric distance of 3258 million miles. Magnitude of about 14 precludes its observation in the usual amateur equipment.



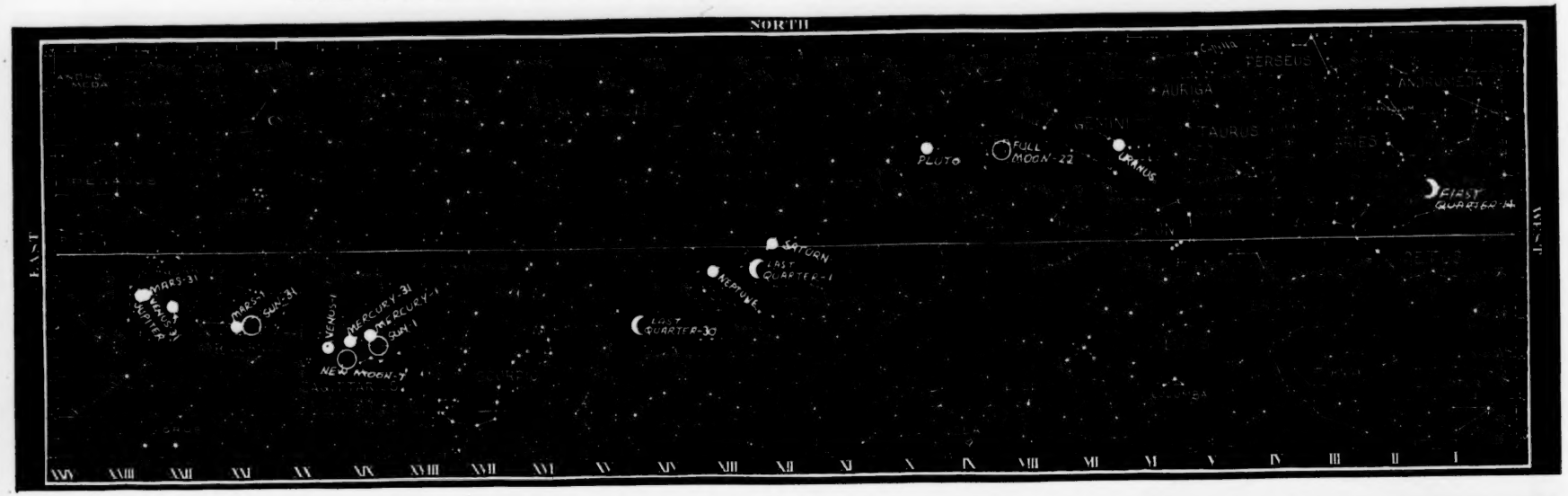
AT 5:00 A. M. JAN. 1 4:00 A. M. JAN. 15 3:00 A. M. JAN. 31

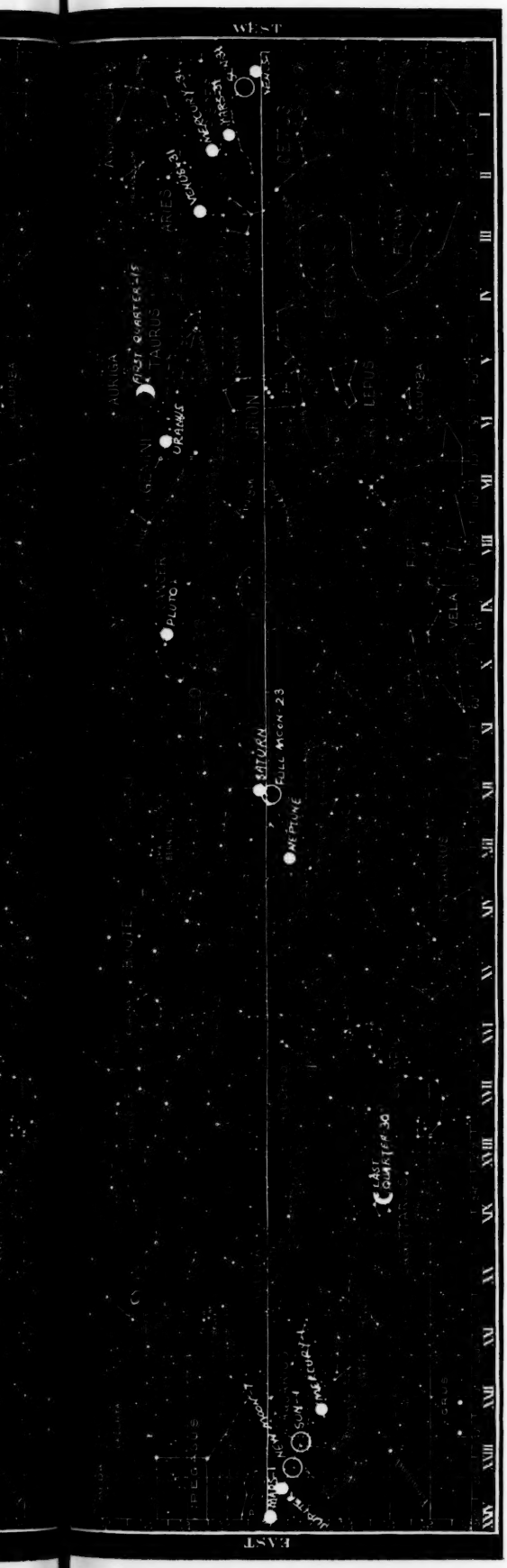
AT 5:30 A. M. FEB. 1 4:30 A. M. FEB. 15 3:30 A. M. FEB. 28

AT 5:15 A. M. MARCH 1 4:15 A. M. MARCH 15 3:15 A. M. MARCH 31

A MERCATOR PROJECTION OF THE STAR FIELD FOR 50 DEGREES NORTH AND 65 SOUTH OF THE EQUATOR

The Star Field makes an apparent complete revolution westward every 24 hours, hence the hourly division from I to XXIV, but this has no relation to the time that any portion of the map is in view.
Practical as a Star, Constellation and Planet Finder for the current months— January-February-March 1951—Anywhere in the world.
Showing also the position of the Sun at the beginning and ending of the month and the position of the Moon at it's several phases.





THE SOUTHERN CROSS

The Southern Cross, wonderful alike to those living in the southern half of the world, and to the tourist thereto, is one of the most conspicuous and interesting of all the southern constellations.

Situated at a distance of about thirty degrees from the South Pole, it is plainly visible in all regions south of the Equator, and also some distance north, about as far as the Tropic of Cancer. The further south one travels, the higher in the heavens will appear the Cross, and naturally the more conspicuous it becomes.

It seems to have received its name, not like the northern constellations from the Ancients, but like most of the southern configurations, from the Portugese navigators, during their explorations into the southern waters. It is said that when Dante came out from "Inferno" he declared that he had seen a mighty cross set in the southern firmament, and the navigators set about to find such a figure, and settled upon this one as best fulfilling the conditions. That it is difficult, at first glance, to picture this as a true cross, is not surprising, for had it been named the "kite," a much closer representation could have been imagined. The so-called "false cross," midway between the Cross and the bright star Canopus, to the right, although composed of fainter stars, is much more regular and symmetrical in shape.

Taken all in all, this Constellation of the Southern Cross, which has been the wonder of centuries, still holds its place as a remarkable curiosity, even with the advance of astronomical investigation. It is seen at its best in May and June. It is marked by a bright star in three of its corners and in the fourth, by two stars a trifle fainter. It is more easily recognized by first searching for the "Pointers," serving as it were, as a guide and handle to the Cross itself. These two stars, the "Pointers" are easily the brightest stars in that part of the sky, and are known as Alpha and Beta Centuri. A line drawn through these and extended to the right about twice as far, passes directly through the center of the Cross.

The brightest star of the Cross, and the most southern is at the end of the long arm, and is called Alpha Crucis. This is doubly interesting from the fact that it was one of the first stars found to be a double, and later discovery disclosed the fact that it was in reality a triple star, for besides having a companion of about the same magnitude as itself, there existed another of about the sixth magnitude. This star is like our own Sun in character, and belongs to the same spectral type as does Sirius, the Dog-Star.

Beta Crucis, situated at the left hand end of the short arm, and the first star encountered in passing from the "Pointers," is of the second magnitude, and, like Alpha, quite blue in color. Although not a double star like Alpha it has in the same field of view a very red star of about the eighth magnitude, which appears like a drop of blood, in marked contrast to the color of Beta. It is said to be the most fiery red star in the whole sky. Also not far from Beta, and surrounding Kappa Crucis, lies one of the most glorious star clusters to be found anywhere. It is not so very large in extent, to be sure, but it is composed of stars of such different hues, that one might imagine that he was gazing into some royal treasure box that contained all the kinds of valuable gems imaginable.

Gamma Crucis, nearly equal to Beta in brightness, lies at the top of the Cross opposite Alpha, and is of a yellowish red color. In fact, due to the color of this star, the configuration, when examined on the photograpic plate, presents even less resemblance to a cross, than when viewed directly in the heavens, for reddish stars do not make such a strong impression on the film of a plate as do the white and blue stars, and accordingly appear much fainter.

From Gamma, at the top of the Cross, we pass on to the fourth corner, and there we see a third magnitude star called Delta Crucis, and not far distant, the fourth magnitude object, Epsilon. It is at this edge of the constellation that the bright star appears wanting, which would otherwise complete the correct representation of the true cross.

Not far from Delta and Epsilon, on the fainter side, lies the famous Eta Carinae Nebula, and this is the portion of the sky where the greatest abundance of stars have been found to exist. In striking contrast to this, on the side near Alpha and Beta, is to be found the most extensive void of stars known to exist in the Milky Way. This is called the Southern Cole-Sack, and is a

XUM

space nearly as large as the Cross itself, not a star can be seen, brighter than the twelfth magnitude, which would require a five inch telescope to perceive. From this limit, the stars extend at least to the twentieth magnitude, and there are also many nebulous objects to be found in this region. This yawning excavation figures in the Australian folk-lore as the "Evil-one" in the form of an Emu, who lies in wait at the foot of the tree (represented by the stars of the Cross), for an oppossum, driven by his persecutions to seek refuge among its branches. How this black vortex, situated so near such a rich region of the Milky-way, can be explained is still a matter of conjecture, and admits of discussion from many different points of view.

JANUARY EVENING SKIES

The glory of the winter heavens goes far to compensate for the shortness of the winter days. If we have less of the sun we have more of the universe. The nights are longer, but the stars are more numerous and more dazzling. The winter moon is more brilliant than the summer moon, because when the moon is full she necessarily occupies a point in the sky exactly opposite to that occupied by the sun, and since the sun runs low in winter, the full moon rides correspondingly high. It is one of the most beautiful compensations that nature affords us.

High in the south, on the meridian, glitter the Pleiades, a group of stars that has for ages fascinated the imagination of men, and about which all the ancient nations invented curious legends. Recent explorers have discovered that even the aboriginal Australians regarded the Pleiades with superstitious reverence. According to the belief of the Arunta, one of the Australian tribes, the Pleiades are, together with the sun and moon, the heavenly ancestors of their race. The chart shows the remarkable assemblage of brilliant constellations that surround the Pleiades, and seem to follow them up the eastern sky with the diurnal revolution of the heavens. They are situated in the constellation Taurus, which also contains the beautiful group of the Hyades, made more lustrous by its great rose-red brilliant Aldebaran. Then below and toward the east comes the great Orion, with his belt, and his two magnificent jewels of the first magnitude, Rigel and Betelgeuse. The belt of Orion, seems to point to Sirius, the brightest of the stars. East of Sirius and higher or farther north, is Procyon, a star with a dusky companion visible to very few telescopes. North of Procyon shine the twins, in Gemini, while high overhead, directly above Orion and Taurus is the bright, white Capella in Auriga. Perseus, Andromeda and Cassiopeia are seen high in the north, west of the meridian, while the Great Bear, Ursa Major, containing the familiar figure of the "Great Dipper" is far below the pole in the northeast. The Milky Way, crossing the sky from near Sirius in the southeast, becomes very brilliant overhead, in Perseus and Cassiopeia, and then drops to the horizon in the northwest, the figure of the "Northern Cross" in Cygnus, which is enveloped in a bright part of the Milky Way, being seen sinking from right where the scending toward the western horizon, followed by Anscending toword the western horizon, followed by Andromeda, while the immense space occupied by the relating barren constellation of Cetus, covers the southwestern quarter, and the winding flood of small stars, constituting the so-called River Eridanus, is seen spreading over the southern sky below Taurus and west of Orion.

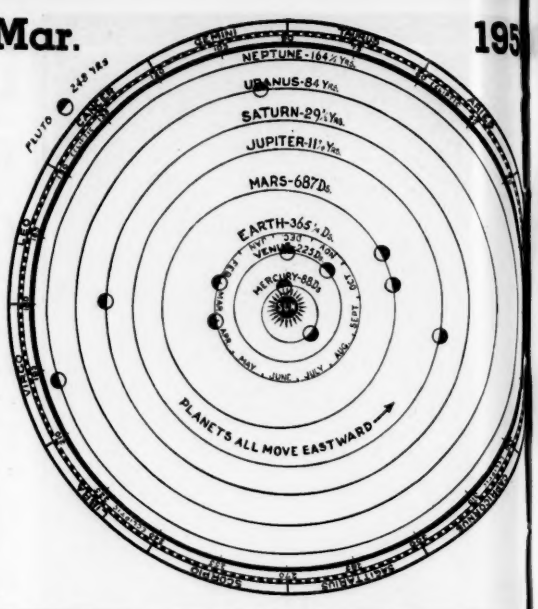
AMATEUR'S FORUM

By IRVING L. MEYER, M. S.

March, 1951

THE SUN: moving from Aquarius, crosses the equator the 21st, and enters the northern hemisphere in Pisces. Geocentric distance the 1st is 92.0 million miles, and the 31st is 92.8 million miles.

There is an annular eclipse of the Sun on the 7th, the path of which crosses New Zealand and Central America (near the Panama-Nicaragua border.) The eclipse will be visible as a partial eclipse over a large part of southern North America, Central America, the north western part of South America, the eastern edge



of Australia, New Zealand, part of the Antarctic Continent, and a large stretch of the Pacific Ocean between Australia and Central & South America. In the United States visibility will be restricted to all locations south of a line running approximately from San Diego, California to Milwaukee and Quebec in Canada.

THE MOON: is closest to the earth the 2nd at 230,000 miles and the 27th at 228,000 miles, and is farthest the 15th at 251,000 miles.

The Moon's Phases (E. S. T.):

New Moon	March 7 at 3:50 PM
First Quarter	March 15 at 12:40 PM
Full Moon	March 23 at 5:50 AM
Last Quarter	March 30 at 12:35 AM

MERCURY: moves from the morning to the evening sky on the 11th (superior conjunction with the sun), moving through Aquarius into Pisces. A keen observer will be able to see Mercury low in the west just after sunset toward the last few days of the month. Magnitude at that time will be 0.9. Maximum distance from the earth, the 5th is 128 million miles.

VENUS: moves from Pisces into Aries, climbing higher in the northern heavens and constantly assuming a more prominent place in the early evening sky. On the 1st, magnitude is 3.4, diameter 11", and distance 137 million miles; on the 31st, magnitude is 3.4, diameter 13" and distance 123 million miles.

MARS: in Pisces in the evening sky, sets shortly after the Sun, and is not readily observable. Distance the 1st is 214 million miles, and the 31st is 222 million miles.

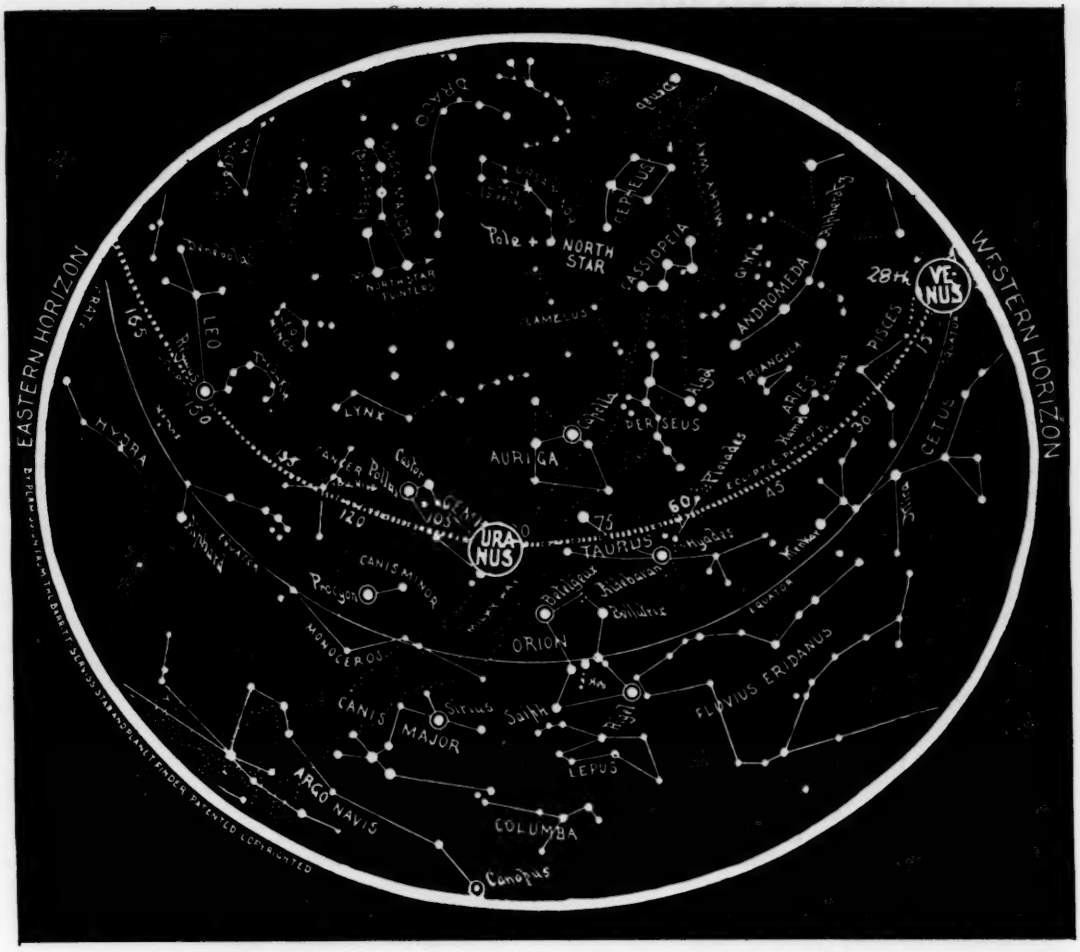
JUPITER: in Aquarius, is in conjunction with the Sun, the 11th, there-after appearing in the morning sky. Too close to the Sun all month to be observable. Maximum geocentric distance, the 12th, 554 million miles.

SATURN: comes to opposition the 20th in Virgo, and remains above the horizon all night. It is well placed for obsevration, being a striking sight telescopically. On the 20th we find: magnitude 0.7, apparent ring diameter 44.2", polar diameter 17.6", equatorial diameter 19.6" (the flattening at the poles will be noticeable in small telescopes), and distance 789 million miles. The ring system, normally readily discernible for what it is, is open only about 2½° and will appear like a broad line of light through the planetfl

URANUS: plods slowly in Gemini, and sets around midnight. Its small round disc can be seen with moderate magnification. Magnitude is 6, and distance the 15th is 1732 million miles.

NEPTUNE: is close to opposition, rising shortly after sunset, in Virgo. An 8th magnitude object, it is nexer visible without optical aid. Distance the 15th is 2731 million miles.

EVENING SKY MAP FOR FEBRUARY



AT 9:00 P. M., FEB. 1; 8:00 P. M., FEB. 15; 7:00 P. M., FEB. 28.

This map is arranged specifically for Latitude 40 North—New York—but is practical for ten or fifteen degrees north or south of this latitude anywhere in the United States, the southern portion of Canada and the northern portion of Mexico and for corresponding latitude in Europe.

PLANETARY CONFIGURATIONS

Eastern Standard Time

March, 1951

March	3— 3:00 AM	Mercury greatest heliocentric latitude south.
March	7—	Annular eclipse of the Sun
March	7—10:22 AM	Conjunction, Mercury and Moon; Mercury south 1° 30'.
March	7—10:02 PM	Conjunction, Jupiter and Moon; Jupiter south 1° 12'.
March	9— 4:36 AM	Conjunction, Mars and Moon; Mars south 2° 23'.
March	10— 1:01 AM	Conjunction, Venus and Moon; Venus south 3° 24'.
March	11— 5:00 AM	Conjunction, Mercury and Jupiter; Mercury south 0° 37'.
March	11— 5:00 AM	Superior conjunction, Mercury and Sun; Mercury south 1° 36'.
March	11—12:00 PM	Conjunction, Jupiter and Sun
March	14— 6:00 AM	Uranus stationary in Right Ascension
March	16—10:35 AM	Conjunction, Uranus and Moon; Uranus south 4° 45'.
March	20— 5:00 AM	Opposition, Saturn and Sun.
March	21— 5:26 AM	Sun enters Aries; Equinox.
March	22— 3:00 AM	Mercury in ascending node.
March	22— 6:00 PM	Venus in ascending node.
March	23— 2:54 AM	Conjunction, Saturn and Moon; Saturn north 3° 53'.
March	24— 1:23 PM	Conjunction, Neptune and Moon; Neptune north 4° 47'.
March	26— 4:00 AM	Conjunction, Mercury and Mars; Mercury
March	26— 6:00 PM	Quadrature, Uranus and Sun.
March	26— 7:00 PM	Mercury in perihelion. north 1° 17'.

HOW PRECESSION OF EQUINOXES WAS DISCOVERED

In the year 134 B. C. Hipparchus observed a new star. This upset every notion about the permanence of the fixed stars. He then set to work to catalogue all the principal stars so as to know if any others appeared or disappeared. Here his experience resembled those of several later astronomers, who, in search of some special object, have been rewarded by a discovery in a totally different direction. On comparing his star positions with those of Timocharis and Aristillus he found no stars that had appeared or disappeared in the interval of 150 years; but he found that all the stars seemed to have changed their places with reference to that point in the heavens where the ecliptic is 90° from the poles of the earth—i. e., the equinox. He found that this could be explained by a motion of the equinox in the direction of the apparent diurnal motion of the stars This discovery of precession of the equinoxes, which takes place at the rate of 52".1 every year was necessary for the progress of accurate astronomical observation. It is due to a steady revolution of the earth's pole round the pole of the ecliptic once in 26,000 years in the opposite direction to the planetary revolutions.

A ROUND TRIP WITH THE LAW OF OPPOSITES

Pale bright stars in the Wishing Well,
Let your echos the tale retell
Of sight, taste, feeling, hearing, smell,
Our five senses and our wits,
Each in rule as it befits
The ruling law of opposites;
And the mission of Man's birth
And heritage from Mother Earth,
The evolution of his worth;
Howbeit on soaring wings of thought
Doth fancy strive to set at nought
The bounds that Father Time hath wrought
In our home, the world we know,
And which in three dimensions flow
Near and far and high and low;
Alas! That fancy should be free
To dwell upon Eternity,
Tho even momentarily.

———

Beseems it unseemly to seem unaware,
Bethink us as caution behooves to take care,
Betake us then in flight if we dare,
Intrepid travellers profound,
The law of opposites to propound
Beginning from the very ground;
Thus, from heat to cold
And darkness to light, make we bold,
But as ever, from young to old,
And ergo! From old to new,
We stir the good and evil brew
Merrily round from false to true,
Our law of laws revolving all;
Then soar away nor fear to fall,
Mind is but a bouncing ball,
And planet Earth left far behind,
A sphere of matter, doth remind
We seek its opposite to find
In space, that curves from place to place,
Whose vastness serves from base to base
And calculates in any case,
A fourth dimension sphere of space,
With all respect to the Hand of Fate
Which did the the ball of Earth rotate
In lieu of a force that doth relate,
A rolling sphere, a cosmic mate,
And (may't defer us a moment's rest)
The speed of the force, if put to test
Must need be one with the Earth's at best,
With Fate in the balance to lighten our quest
For a force that is true according to
The need of a force, a force to renew,
With the family of orbits affording no clue
Affording approach to the planets in view,
No locking gears with sister spheres
But oriented each appears
The pride of a force the Sun it clears
To guide her cycle through the years,
And the law of opposites doth decree
The force a branch of a family tree
Of fifth dimension geometry
And cosmic trigonometry,
Whose trunk churns the Sun in rotary
While criss-crossing to and fro
To swing and sway its branches so
They interplay as they come and go,
Their pulsing force in daily flow
To the spheres where planets grow,
And lo! Our law's Eternal Light!
The planet's lowly satellite
Disclosed within the space sphere's might,
Is wedded to the opposite,
A fourt dimension negatite
Which doth the space sphere imitate,
And with the planet to relate,
The cosmic pulse to compensate,
The fifth dimension doth negate,
To weigh the law and all with Fate,
And tho the interplanetary
Swinging weights are quite contrary,
They do balance while they vary,
An inter-complementary
World in perpetuary,
Whereon turns our law to face
And contemplate a commonplace,
A sphere which doth our world embrace,
Revolved by spheres of outer space
Affecting evolution's pace,
A sixth dimension Solar case
Reflecting, projecting
Impressions of connecting;
Collecting, correcting,
The laws of growth directing;
Selecting, subjecting,
Both life and death protecting;
And oppositive law Earthbound, is free
To ponder on the mystery
Of Eternity's administry,
But to the Power in Consistory
The law is non-existory,
And the story of His ministry
Is Seventh Dimension history.

By George A. Schoenberg
533 West End Avenue
New York 24, N. Y.

WINTER SKY

Orion stalks across the sky
With belted sword, club lifted high;
He seeks to catch that red-eyed bull,
The fiercest starry prey to pull.
The Gemini stand by-in case
Their help is needed in the chase,
But Procyon appears aside
With Sirius in brilliant stride.
The huntsman brave and hounds pursue
Their quarry, which, always in view,
Revolves in his accustomed place—
Ahead in this celestial race.

—Billie W. Ferrell

IN APPRECIATION

We scan the sky at evening time,
  And compare it with our map
We watch Arcturus upward climb
  While Polaris takes a nap.
For the glorious "Suns of Night"
  Many care not a rap.
Not so here; 'tis our delight
  To find stars that's on Barritt's Map.

BARLOW LENS: Send stamped return long envelope with 3c postage for free truly astounding educational informations as to how the Goodwin 3x Barlow can greatly improve your telescopic images and magnifications. F. Goodwin, 345 W. Belden Ave., Chicago 14, Ill.

A LEVELED WORLD

If all the hills on the earth were used to fill in all the valleys, we should have a world as smooth as a billiard ball, completely covered with an ocean 8,700 feet deep. That depth is called the "mean sphere level." The Atlantic ocean has an average depth that differs little from that level, for, compared with the other great oceans, it has an unusually large area of comparatively shallow water. First comes the shelf-like "continental slopes;" then follows, at much lower level, a vast plain of a uniform, dull-grayish-buff color, flat and featureless as the desert, unmarked except by an occasional rock or wreck, or a recently laid cable. This plain continues with hardly a break until it reaches the great mid-Atlantic ridge that extends from Iceland as far south as 53 degrees south latitude and that roughly bisects the ocean. The ridge runs almost parallel with the eastern contour of Europe and Africa. Occasionally the ridge rise above the surface. The Azores, St. Paul's Rocks, Ascension Island, the Island of Tristan De Cunha, and the Gought Islands are all parts of it—

—Christian Science Monitor

THE UNIVERSAL CLOCK

(*Continued from Page Three*)

eons beyound our concept of reckoning when pines bow to the wind in the dust that we once stirred.

The supreme force made this earth out of cosmic dust and gave man the creative power to change dust into slaving energy. With that God-given power of thought man magnified his vision, not only to penetrate the vastness of space, but also to see the infinitesimal smallness of microscopic life. So he learned the habits of germs, and organized bacterial wars to cleanse the earth from pestilence, plagues and fevers. From raw elements he refined poisons to kill off pests and fungi that infest her forests, fields and streams. Not satisfied with the animals and the plants on nature, he domesticated them, and changed by selective breeding the stature and their habits to suit his needs. Out of love for his fellow-men and his animal friends he created his own beasts of burden on flat wheels, fins and wings, that need no rest, or sleep, or a whiplash to be efficient and carry him swiftly to his neighbors when he needs him. From the dust he made monsters with powerful teeth and claws that bite into the earth and burrow through mountains shorter roads for progress without feeling the sting of slavery or the pain of enforced labor. By speeding up and amplifying his voice until it races eight times around the world in one second, man can now hear the distress call of his brother in time to rush help and supplies to distant places when the elements run amuck and destroy food and shelter.

Science made man emerge from the fears and imageries of his forbears who considered God a grouchy elder, woman a chattel and their less fortunate equals convenient merchandise. Under the X-Rays of truth, crowns, miters and masks fail to hide any longer man's equality in the eternal stream of life. Princes and potentates are giving way for new rulers sprung from the masses of thinking men and women splendid rebels without fear, bow deeper before the altar of progress than before the golden calf. In rhythmic order this new force shall abolish crime and poverty and break up the rusting swords of hatreds that cleaved this earth in patches of dissension and God's one loving faith in a multitude of quarrelsome sects.

No damper can prevent a volcano from spitting fire, no dam can bar a stream's flow to the sea, neither can intolerance brake the momentum of science, for the creative urge in man is—like the stream and the volcano —a universal force.

Because constructive effort is driven by loving thought, we find today so many apostles of progress ready to be martyrs for their cause, just to prove to others that the miracles of science can be done.

Life is short, but while it dwells in our frame whose motor runs on the current of eternal thought, we should keep our motor active, and—clean.

An occasional meditation in solitude under the stars will give us the wisdom to do it, for their rhythmic flow of silent greatness symbolizes the four passwords to achievement: order—precision—progress and peace.

With this emblem in our banner we can serve in the vanguard of mankind, and help our creator change this earth from a clod of crude matter into a paradise of beauty and happiness; and man, from a credulous, vengeful brute to a sober thinker and an advocate of brotherly love.

To LEON BARRITT, (Dec. 1929)

JOE KEYSER

"CELESTIAL OBSERVERS CORNER"

Classified advertisements are accepted now in this space at 15 cents each word.

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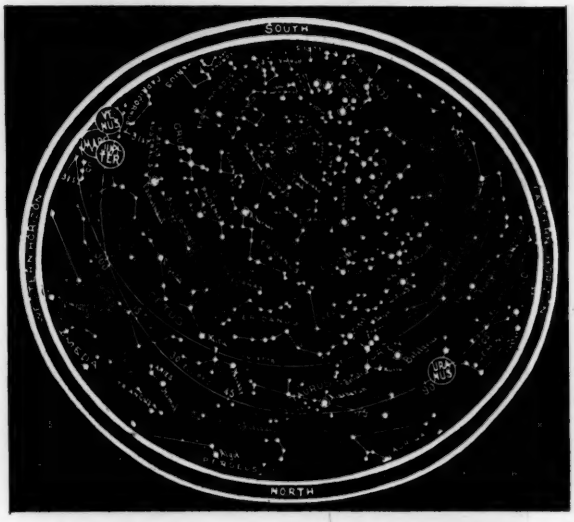
EVENING SKY SOUTHERN HEMISPHERE



AT 8:45 P. M., JAN. 11; 7:45 P.M., JAN. 15; 6:45 P.M., JAN. 31.

THE BARRITT-SERVISS

COLLABORATED BY LEON BARRITT AND GARRETT P. SERVISS

The Planets, the Sun and the Moon are made to move through their regular orbits by an ingenious system of Disks which are entered upon the map at stated periods by a simply arranged system of Tables extending over a period of 12 years, so that their true positions are located at the date of entry, enabling anyone to follow the progress of these great travelers of the sky with delight and intellectual profit. Tells their time of rising and setting.

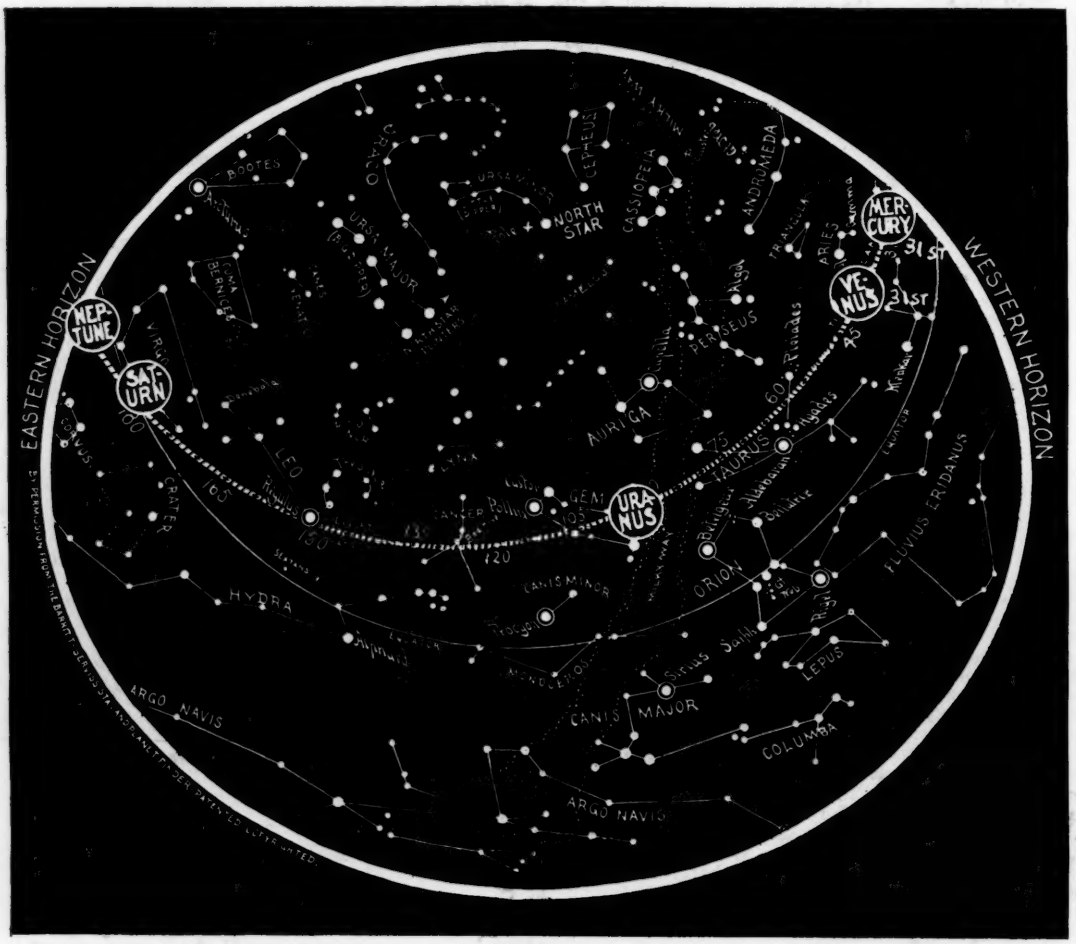
The Chart is 15 x 15 inches square and has a revolving disk map showing all the stars visible to the naked eye in the Northern Hemisphere, down to the 4th magnitude. The map is arranged specifically for Latitude 40, North—New York—but is practical for ten or fifteen degrees north or south of this latitude anywhere in the United States, the southern portion of Canada and the northern portion of Mexico and for corresponding latitudes in Europe.

The Barritt - Serviss Star and Planet Finder is endorsed by professional and amateur astronomers, yachtsmen, navigators and aviators as a thoroughly simple practical star and planet finder of the highest standard.

PRICE

$7.00

EVENING SKY MAP FOR MARCH



AT 9:00 P. M., MAR. 1; 8:00 P. M., MAR. 15; 7:00 P. M., MAR. 31.

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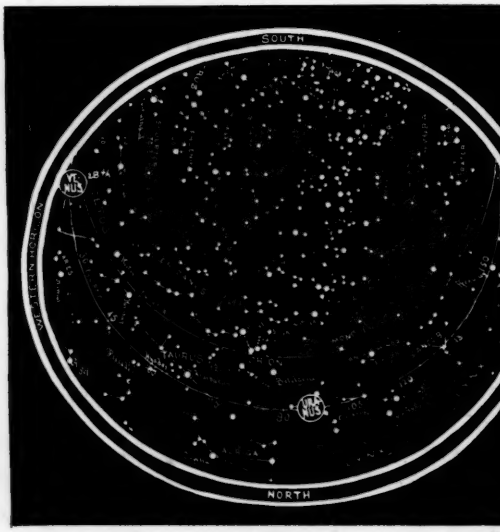
EVENING SKY SOUTHERN HEMISPHERE



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